How does Incarceration of a Parent Affect Aspirations for Their Child's Education

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This paper considers the effects incarceration has on a parents aspirations for their oldest child's educational attainments. The experiment highlighted in this paper aims to contribute to previous literature surrounding the significance of aspirations, and where these aspirations come from. This experiment is conducted through the Wisconsin Longitudinal Study, where 10,317 Wisconsin high school graduates from 1957 are surveyed every few years over a wide variety of subjects. Further, a simple regression consisting of self-reported fathers is conducted. Our results indicate that incarceration strongly affects parental aspirations when adjusted for the criminal's specific level of education, but is statistically insignificant otherwise.

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I. Introduction

A large body of literature finds that parental aspirations are one of the biggest determinants of how well a child performs educationally in the long term Zax and Rees (2002), and Mortimer, Zhang, Hussemann, and Wu (2015). While this point has been proven on several occasions in different control groups (Alibekova, 2020), little has been done surrounding the specific factors that influence these parental aspirations. None of these studies look into how these aspirations may differ for parents with a criminal past. According to these studies, the educational attainments of an individual either decrease if they grow up surrounded by lots of criminal activity (Rud, 2014) or have a statistically insignificant difference (Bhuller, 2018).

In this paper, I will be exploring this concept further and going into the effects parental incarceration has on parental educational aspirations for their firstborn child. This correlation is of interest due to the ambiguity of results in the criminal literature surrounding the educational outputs of their children. Intuitively, it is easy to see that a parent may pass on their experiences to their child and become more likely to have low expectations for the future of their children. On the other hand, the latter could be true. They could also take their traumatic incarceration experiences and work extra hard to ensure their kids turn out with a brighter future.

The data used in this report comes from the Wisconsin Longitudinal Study. This study surveyed over 10,000 high school respondents from 1957 and checked in with them every 4 years to track their whereabouts. I will be using data from this study from 1975 and earlier. In addition, I will only be observing the men in this study, as the convicted criminals are largely men. This sample will also only include self-reported parents. Similarly, all of those who reported unclear results to these studies, such as "inappropriate" or "no response," will be omitted from the analysis of this sample.

The key dependent variable observed in this study is the educational aspirations that male respondents have for their firstborn child. This variable is a binary variable, with 1 representing an aspiration exceeding or equating to a college degree and 0 representing an aspiration lower than a college degree. Moreover, the key independent variable measures whether or not the respondent had a record of incarceration before 1975. This is also a binary variable, with 1 representing those with a criminal record and 0 otherwise. This study will hold constant environmental factors that may influence the parental aspirations, such as IQ, family income, parental income in 1957, educational attainment of the respondent, high school rank, and the age of their firstborn child observed.

II. Literature Review

The research in this paper is focused on the effects an individual's incarceration has on their aspirations for their child's education. The motive behind this research is to expand on recent research surrounding

parental aspirations and the significance they have on their children's educational outcomes. In addition, this paper is motivated by studies relating to the criminal justice system and how its nature may propel economic inequality in societies with high crime rates.

Recently, parental aspirations have been a popular field of study. They have proven, on a large scale, to have a strong correlation to the future success of children. Zax and Rees (2002) were among the first to find this out. In their paper, they studied in depth the factors that correlate most to the success of Wisconsin children. After holding constant a large variety of factors such as childhood IQ, income, and educational peers, Zax and Rees conclude that parental aspirations are one of the most important things to observe when predicting a child's outcome.

In addition, Mortimer, Zhang, Hussemann, and Wu (2015) studied the effects of growing up with economic hardships in Minnesota on future educational attainment. They came to a similar conclusion: parental aspirations are one of the biggest indicators of how far their children will go academically.

The idea of looking into marginalized groups specific correlation with educational achievement was pursued in Alibekova (2020). In this study, they discovered yet again a strong correlation between educational attainment and aspirations for ethnically minoritized groups. However, they found that for ethnically minoritized groups, the father's educational aspirations had stronger correlations than their mother's aspirations. Little work has been done to take this concept further and study specifically how a variety of factors affect a parent's educational aspirations for their children. Likewise, none of these papers study incarcerated parents. In this paper, I will be doing this and focusing on how educational aspirations are affected by parental incarceration.

This research is also motivated by studies focused on the effects of growing up in high-crime environments. Specifically, how this relates to a child's educational success Much of this literature relates specifically to the relationship between growing up in high-crime neighborhoods and child outcomes. For instance, Sharkey (2018) finds a strong negative bivariate relation between neighborhood violence and upward economic mobility. In this paper, he focuses on different commuting zones in the United States through data provided by the Equality of Opportunity project covering the years 1980–1986, After holding constant data for defining factors such as income and demographics of each commute zone, he finds that a 1 percent increase in the violent crime rate causes a.02-point decline in the expected income rank for a child beginning at the 25th percentile.

Similarly, Gobaud (2022) studies the socioeconomic differentials in crime between low- and high-crime zip codes in the United States. In this paper, the zip codes with the highest and lowest median household incomes are compared in terms of their level of violent crime. This paper further discovers that both living in a lower-income zip code and a lower-income state have a positive correlation to violent crime incarceration.

This paper is especially significant as it proves the extent that environmental homogeneity affects criminal activity.

Furthermore, the topic of the sociological impact of growing up with a parent who is incarcerated is studied in Murray (2012). In this approach, 14,690 references were screened in order to ensure a robust conclusion on a variety of sociological factors such as antisocial behavior, mental health, and drug usage. After a meta-analysis was performed, 50 samples made the cut, creating a data source containing 7,374 children with incarcerated parents and 37,325 children as the control group from 7 different countries (the United States, the U.K., the Netherlands, Denmark, Sweden, Australia, and New Zealand). This study produced the result that antisocial behavior and poor educational performance strongly correlated to parental incarceration, while the correlation between incarceration and poor mental health, along with drug usage, was proven statistically insignificant. This is a result of interest, as it implies that there is more complexity in the correlation between parental incarceration and the educational attainment of their children. In this paper, we will research the possibility that parental aspirations contain a possible explanation for this result differential.

The most closely related papers to the research synthesized in this report come from Rud (2014), Bhuller (2018), and Arteaga (2021). Rud (2014) studies the relation between parental incarceration and their children's educational attainment, researched through the Netherlands Kinship Panel Study. This study collected data between 2002 and 2004. This paper comes to the conclusion that growing up in households with criminal parents lowers educational attainment substantially, even after holding constant factors such as household income and parental educational attainment. While this study goes into parental incarceration and their child's educational attainment in depth, they conduct their research based in the Netherlands, which has a vastly different crime culture than in Wisconsin. Furthermore, I will be focusing on parental aspiration differentials as opposed to direct child educational attainments.

Bhuller (2018) uses the same Netherlands Kinship Panel Study to study the relation between parental incarceration and their child's school grades and probability of committing a crime. After running regressions while holding constant judge rulings, Bhuller concludes that there are no statistically significant findings between parental incarceration and their children's grades and criminal behavior. The author justifies these findings by explaining how Norway's culture surrounding rehabilitation instead of punishment could make it so these findings could greatly vary in other countries, especially in the US. In my report, I will be focusing on crime in the US.

Arteaga's (2021) approach proves the hypothesis from Bhuller's (2018) paper surrounding the correlation between parental incarceration and their children's educational attainment varying in different countries to be correct. Arteaga (2021) uses data from the SISBEN in Colombia, taken between 2005 and 2016. This

sample contains 90,000 low-income convicted parents and holds constant for variation in judicial decisions on incarceration. With the help of records from the Attorney General's Office, administrative data on public school enrollment was used to track these children. After analyzing this data, a surprising conclusion was reached. On the margin of parental incarceration, the data proved a 0.78-year increase in the average number of years of their child's education.

III. Methodology

The data I use in this report comes from the Wisconsin Longitudinal Study from 1957 to 2003. This study follows over 10,000 high school graduate respondents from Wisconsin, sending out survey questions every 4 years. The sample used in my research is restricted to male respondents and excludes those who answered "No Response" or "Inappropriate" to any of the variables of interest. Key groupings of variables tracked are displayed in Equations 1, 2, and 3, with Equation 1 consisting of all respondent-dependent qualities, Equation 2 consisting of parental-dependent qualities, and Equation 3 consisting of the two combined. My main regression equation of interest is Equation 4, after including an experimentally proven insightful interaction term. Equations 5 and 6 include terms to help analyze the outcomes of Equation 4.

$$Aspir_i = \beta_0 + \beta_1 X_i + \beta_2 inc75_i + \beta_3 age_i + \beta_4 young_i + \beta_5 mar_i + \beta_6 ed_i + \beta_7 iq_i + \beta_8 \delta_i + \beta_9 \gamma_i + \epsilon_i \tag{1}$$

$$Aspir_i = \beta_0 + \beta_1 age_i + \beta_2 inc57_i + \beta_3 \theta_i + \beta_4 \Theta_i + \beta_5 \alpha_i + \epsilon_i \tag{2}$$

$$\begin{aligned} Aspir_i = \beta_0 + \beta_1 X_i + \beta_2 inc75_i + \beta_3 age_i + \beta_4 young_i + \beta_5 mar_i + \beta_6 ed_i + \beta_7 iq_i + \beta_8 hssize_i + \beta_9 \gamma_i + \\ \beta_{10} inc57_i + \beta_{11} \theta_i + \beta_{12} \Theta_i + \beta_{13} \alpha_i + \epsilon_i \end{aligned} \tag{3}$$

$$\begin{aligned} Aspir_i = \beta_0 + \beta_1 X_i + \beta_2 X_i * ed_i + \beta_3 inc75_i + \beta_4 age_i + \beta_5 young_i + \beta_6 mar_i + \beta_7 ed + \beta_8 iq_i \\ + \beta_9 hssize_i + \beta_{10} \gamma_i + \beta_{11} inc57_i + \beta_{12} \theta_i + \beta_{13} \Theta_i + \beta_{14} \alpha_i \end{aligned} \tag{4}$$

$$\begin{aligned} Aspir_i = \beta_0 + \beta_1 X_i + \beta_2 X_i * \gamma_i + \beta_3 inc75_i + \beta_4 age_i + \beta_5 young_i + \beta_6 mar_i + \beta_7 ed + \beta_8 iq_i \\ + \beta_9 hssize_i + \beta_{10} \gamma_i + \beta_{11} inc57_i + \beta_{12} \theta_i + \beta_{13} \Theta + \beta_{14} \alpha_i \end{aligned} \tag{5}$$

$$Aspir_i = \beta_0 + \beta_1 X_i + \beta_2 X_i * ed_i + \beta_3 X_i * \gamma_i + \beta_4 inc75_i + \beta_5 age_i + \beta_6 young_i + \beta_7 mar_i + \beta_8 ed + \beta_9 iq_i + \beta_{10} hssize_i + \beta_{11}\gamma_i + \beta_{12} inc57_i + \beta_{13}\theta_i + \beta_{14}\Theta + \beta_{15}\alpha_i \tag{6}$$

After experimenting with ordered probit regressions, I discovered there was not much difference between them and regressions. Because of this, in my report, all analysis is done exclusively through regressions. The variables in Equation 4 are described by Tables 1 and 2.

Table 1: Table of Methodology Components

Aspir	Aspirations the respondents have for the educational attainment of their first born
X	A binary variable where 1 represents a "Yes" answer to the question "Do you have a history of incarceration?" before 1975, and 0 else-wise
young	The variable signifying if the oldest child was younger than 13 when parent was first incarcerated
IQ	The respondents IQ
age	The age of their first born child in 1975
inc75	Household income in 1975, in 100s of dollars
ed	Educational attainment of the respondent in years of total education
inc57	Household income of the parents of the respondent in 1957, in 100s of dollars
spiq	The IQ of the respondent's spouse
hssize	the size of the respondent's high school graduating class
mar	The indicator if the respondent is married or not in 1975
δ	The rank of the respondent at graduation in percentiles
α	The respondent's parent's expectations for their college completion in 1957
γ	The respondent's expectation for their completion of college in 1957
Θ	The educational attainment of the respondent's mother in years
θ	The educational attainment of the respondent's father in years
ϵ	Error term

These variables are coded in this study as follows:

A. Key Y variables

Table 2: Key Y variables

Parental Educational Aspirations Variable 1	This variable is a categorical variable coded from 1 to 6, representing the educational aspirations of fathers for their first-born children. This variable was taken in 1975, when the high school graduate respondent's age was around 36. In this case, 1 is coded for those who don't expect their firstborn to finish high school; 2 is coded for those who expect their firstborn to complete high school but not pursue any further education; 3 is coded for those who expect their firstborn to start college but not complete a bachelor's degree; 4 is coded for those who expect their firstborn to complete a bachelor's degree but no further; 5 is coded for fathers who expect their firstborn to complete a master's degree; and 6 is for those who expect their child to pursue education beyond a master
Parental Educational Aspirations Variable 2	This variable is a binary variable representing the educational aspirations of fathers for their first-born children. This variable was taken in 1975, when the high school respondents were around the age of 36. In this case, 1 represents those who expect their firstborn to finish their bachelor's degree or go beyond, and 0 represents those who don't expect their firstborn to finish a bachelor's.

B. Important X variables

Family Income in 1975 Variable: This continuous variable is the total reported annual income in the respondent's household in 1975. This variable is in the magnitude of 100's of dollars, coded from 1 to 1650. This variable omits observations in the sample who chose not to respond or responded with an income of 0.

Educational Attainment of Surveyed Individual Variable: This continuous variable is the total number of years of education that the respondent reports relative to 1975. This variable ranges from 12 to 20, with 12 representing only a high school degree and 20 representing 8 extra years of education after graduating from high school.

IQ of Surveyed Individual Variable: This is a continuous variable representing the reported IQ score of male respondents recorded in 1957, the year of high school graduation. This variable ranges from 61 to 145.

Age of First Born Child of Surveyed Individual Variable: This variable is a continuous one representing the reported age of the respondent's oldest child. This variable is derived from the 1975 survey, where the surveyers ask what year the respondents first child was born. From there, the age of the oldest child relative to 1975 is calculated. This variable ranges from 0 to 18.

Educational Attainment of Surveyed Individuals Spouse Variable: This is a continuous variable representing the years of education completed by the spouse of the male respondent. This variable is coded between 0 and 20.

Spouse IQ of Surveyed Individual Variable: This is a continuous variable representing the IQ of the respondent's spouse, taken at their high school. This data is reported in the ancillary data section of the Wisconsin Longitudinal Data Set. This variable ranges from 61 to 139.

High School Rank of Surveyed Individual Variable:This is a continuous variable recorded after the respondent's senior year of high school. This variable ranges from 0 to 99.9, representing the relative high school rank of the respondent depending on their GPA at their high school. In this instance, 0 represents the bottom of their class, and 99.99 represents the top.

High School Size of Surveyed Individual Variable: This is a continuous variable representing the respondent's high school class. This variable ranges between 4 and 482.

Parental Income of Surveyed Individual in 1957 Variable: This is a continuous variable representing the reported income of the respondents parents. This variable is the year of high school graduation and ranges from 1 to 998. This amount is reported in hundreds of dollars.

Educational Attainment of the Respondent's Mother in 1957 Variable: This is a continuous variable representing the number of years of education that the mother of the respondent completed. This variable is taken from the year of high school graduation in 1957 and ranges from 7 to 18.

Educational Attainment of the Respondent's Father in 1957 Variable: This is a continuous variable representing the number of years of education that the father of the respondent completed. This variable is taken from the year of high school graduation in 1957 and ranges from 7 to 18..

Parental Expectations for Educational Attainment of the Respondent in 1957 Variable: This variable is a binary variable representing whether or not the parents of the respondent expect them to go to college. This variable is coded as 1 if they do, and 0 if they don't.

Expectations of the Respondent's Educational Attainment in 1957 Variable: This variable is a binary variable, coded as 1 if the respondent expected to obtain a college degree or higher, and 0 otherwise.

Age of the First-Born Child of the Respondent Variable: This is a binary variable representing the first-born children of the respondent who were under the age of 13 at the time of their parents first incarceration. This variable is coded as 1 if the kid was 13 or younger at the time of the first parental

incarceration and 0 otherwise.

Child Young Age at Parental First Incarceration Variable: This is a binary variable derived from both the survey questions: "What year were you first incarcerated?" and "What year was your oldest child born?" From there, the difference between the two is calculated, and if the oldest child was 13 or younger when the parent was first incarcerated, then the variable is set to 1. The variable is set to 0 otherwise. Note: If the parent's first incarceration was before 1975, they are coded as 0 along with the general population.

Marital Status of Respondent in 1975 Variable: This is a binary variable derived from the survey question taken in 1975 of: Current Marital Status. This variable is coded as missing and dropped from the sample if the respondent did not answer the question, 1 if the respondent claimed to be married, and 0 if the respondent answered: single, separated, divorced, or widowed.

C. Key X variable

Jail History of Surveyed Individual Variable: This variable is based off of the variables reported in 2003: "Have you ever been to jail?" and "At what age did you first go to jail?" From there, a binary variable is created, with 1 representing those who had their first instance of incarceration before 1975 and 0 for all other observations in the sample.

D. Complimentary Analysis

1. Spousal Analysis

This analysis neglects spousal qualities. This is because much of it is hard to interpret at face value as lots of the present data obtained are influenced by qualities impossible to hold constant in this data set. However, a regression including spousal qualities, is seen is modeled by Equation 7, and shown in Regression 7.

$$\begin{aligned} Aspir_i = \beta_0 + \beta_1 X_i + \beta_2 X_i * ed_i + \beta_3 inc75_i + \beta_4 age_i + \beta_5 young_i + \beta_6 mar_i + \beta_7 ed + \beta_8 iq_i \\ + \beta_9 hssize_i + \beta_{10}\gamma_i + \beta_{11} inc57_i + \beta_{12}\theta_i + \beta_{13}\Theta_i + \beta_{14}\alpha_i + \beta_{15} spIQ_i + \beta_{16} spEd_i \end{aligned} \tag{7}$$

The new variables introduced in this regression are:

Spousal IQ: This variable is from 2003 and takes the current spouse of the respondent's maiden name to find their IQ score in the Wisconsin database. Because we are using data relative to 1975, another survey question from 2003 is taken, asking if they are still with their spouse from 1975. If they answer that they

are with a different partner, then they are counted as missing for the data used in this report. Similarly, if the spouse did not attend high school in Wisconsin, they are also coded as missing. This variable ranges from 67 to 153.

Spousal Educational Attainment: This variable is from the 1975 survey question: How many years of education has your spouse completed? This is a continuous variable ranging between 7 and 23.

2. Educational Attainment of Children Analysis

Furthermore, this report will contain a brief analysis on how these 1975 children end up fairing educationally and how qualities such as aspirations and parental incarceration relative to 1975 affect them. Regressions include characteristics seen in Equations 8, 9, and 10.

$$EdAtt_i = \beta_0 + \beta_1 X_i + \beta_2 Aspir_i + \beta_3 inc75_i + \beta_4 age_i + \beta_5 young_i + \beta_6 mar_i + \beta_7 ed + \beta_8 iq_i + \beta_9 hssize_i + \beta_{10}\gamma_i + \beta_{11} inc57_i + \beta_{12}\theta_i + \beta_{13}\Theta_i + \beta_{14}\alpha_i \tag{8}$$

$$EdAtt_i = \beta_0 + \beta_1 X_i + \beta_2 Aspir_i + \beta_3 X_i * Aspir_i + \beta_4 inc75_i + \beta_5 age_i + \beta_6 young_i + \beta_7 mar_i + \beta_8 ed + \beta_9 iq_i + \beta_{10} hssize_i + \beta_{11}\gamma_i + \beta_{12} inc57_i + \beta_{13}\theta_i + \beta_{14}\Theta_i + \beta_{15}\alpha_i \tag{9}$$

$$EdAtt_i = \beta_0 + \beta_1 X_i + \beta_2 Aspir_i + \beta_3 X_i * \alpha_i + \beta_4 inc75_i + \beta_5 age_i + \beta_6 young_i + \beta_7 mar_i + \beta_8 ed + \beta_9 iq_i + \beta_{10} hssize_i + \beta_{11}\gamma_i + \beta_{12} inc57_i + \beta_{13}\theta_i + \beta_{14}\Theta_i + \beta_{15}\alpha_i \tag{10}$$

IV. Descriptive Statistics

A. Table Statistics

Table 3: Table of Means

Variable Meaning	Criminal Group Mean	Control Group Mean	p-value	N
Family Income in 1974 in 100's (USD)	181.07 (94.81)	182.48 (99.73)	0.94	1,937
# of Years of respondent's Education	13.65 (0.37)	13.53 (0.04)	0.7494	1,937
IQ of Respondent	101.02 (15.01)	101.45 (14.94)	0.8184	1,937
Age of Grad's 1st born child	11.53 (3.67)	11 (3.6)	0.48	1,937
Marriage Status Respondent	0.96 (0.20)	0.96 (0.19)	0.98	1,937
College Expectation's of Respondent's Self 1957	0.46 (0.51)	0.43 (0.50)	0.74	1,937
Grad's High School Rank Percentile	40 (28.4)	44.7 (27.5)	0.41	1,937
Size of Grad's Graduating Class	169 (130.9)	167.9 (131.4)	0.9668	1,937
Income of Grad's Parents in 1957 in 100's	65.6 (50.4)	63.6 (64.16)	0.84	1,937
Educational Attainment of Respondent's Father	11.1 (3.4)	10.3 (3.1)	0.27	1,937
Educational Attainment of Respondent's Mother	11.3 (2.9)	10.6 (2.9)	0.52	1,937
Parental Collegiate Expectation's for Respondent 1957	0.69 (0.47)	0.59 (0.49)	0.27	1,937

To start off, an analysis of key characteristics such as: annual income, educational attainment, and familial background was conducted, comparing respondent's with criminal backgrounds as of 1975 to the control group (See Table 3). None of the qualities tested produced a statistically significant difference at a level of 1, 5, or 10. This is significant as there are no obvious differences in the economic state of these former criminals when compared to the control group.

Table 4: Cross Tab Comparing Key Variables 1

	Record of Incarceration Before 1975		
Parental Aspirations	No	Yes	Total
Below Bachelors	834	12	846
	43.38%	46.15%	43.37%
Bachelors or Higher	1079	14	1093
	56.61%	53.84%	56.63%
Total	1911	26	1937
	100.00%	100.00%	100.00%

Afterwards, the key variables were compared. The base aspirations of those with criminal backgrounds were compared at face value to those of the control group. According to Table 4: those in the control group have slightly higher aspirations for their children, but not as much as expected. In this paper, I explore the validity of this initial hypothesis.

Table 5: Cross Tab Comparing Key Variables 2

	Record of Incarceration Before 1975		
Parental Aspirations	No	Yes	Total
Below High School	2	0	2
	0.06530%	0.00%	0.06420%
High School Diploma	381	8	389
	20.63%	26.92%	20.74%
Some College	275	2	277
	14.37%	7.692%	14.25%
Bachelors Degree	1077	14	1091
	56.61%	59.62%	56.66%
Masters Degree	47	0	47
	2.090%	0.00%	2.05%
PhD or above	129	2	131
	6.240%	5.770%	6.23%
Total	1911	26	1937
	100.00%	100.00%	100.00%

Before concluding that the binary variable representing parental aspirations was the most efficient way to conduct my analysis, I looked into utilizing a variable that had a variety of key, definite educational levels. I ran ordered probit regressions using Key Variable 2 (see Table 5) as the key dependent variable and found similar outcomes when compared to regressions containing Key Variable 1. I further decided to use Key Variable 1 as the main subject of my analysis, as the sample size of the grouping of criminals was too small to produce statistically significant results when breaking it up further. Likewise, groupings in my data with educational attainment at or above a college education had similar economic behavior, especially when looking at those with some college or less. Furthermore, those in Key Variable 2 who responded "below high school,", "high school diploma,", or "some college" are coded as "below bachelors" in the final Key Variable 1. Likewise, those who responded with "Bachelor's Degree, Master's Degree, or "PHD or above", are coded as "Bachelor's or Higher" in Key Variable 1.

B. Analysis Equations

I first broke up the qualities that could influence the respondent's aspirations for their child's education into 2 separate regressions: the qualities taken relative to 1975 that represent the respondent's life (Equation 1) and qualities from the respondent's background that could influence their outlook on life (Equation 2). I make sure to keep the age of the respondent's child constant in both equations, as this is neither influenced by current-day conditions nor background qualities. In Equation 1, I make sure to include characteristics such as family income in 1975, IQ, current-day educational attainment, and even collegiate expectations for themselves the year of high school graduation. Similarly, in Equation 2, background qualities such as mother and father educational attainment relative to the respondent's high school graduation, parental income in 1957, and the size of their graduating class are considered. Equation 3 combines these two thoughts, giving us a simple explanation for what influences parental aspirations the most. After noticing a few counter-intuitive results, Equations 4, 5, and 6 were created to deepen the analysis of what exactly causes parental aspirations. In addition Equations 7, 8, 9, and 10 provide further relevant analysis.

V. Regression Results

The regression results corresponding to Equations 1, 2, and 3 are displayed in Table 6. In this first regression, I find that the statistically significant variables are income, the age of their firstborn, the size of their high school graduating class, marital status, and most importantly, their own college expectations for themselves after graduating high school. All of these prove statistically significant at a 5 percent level, except their own collegiate expectations and the age of their firstborn, which are statistically significant at the 1 percent level. Similarly, their criminal record status, educational attainment, and IQ are proven to

display statistically insignificant results. This is especially important as it implies that their aspirations for their children are heavily impacted by events leading up to their high school graduation, regardless of later accomplishments after having children. Moreover, the magnitudes of these results show that this sample has a positive correlation between parental aspirations and family income, high school graduation sizes,and a negative correlation with the age of their firstborn and marital status.

These results lead into the second regression, where I exclusively analyze the parental qualities of the respondent (see Equation 2), while also keeping the age of their oldest child constant. This regression attempts to highlight qualities that are statistically significant to their aspirations in relation to their upbringing. This regression takes into consideration parental income, the educational attainment of their father and their mother, along with the expectations of parents for the respondent's college attainment. Amongst all of the qualities tested, the statistically significant variables ended up being the age of the firstborn in 1975, parental income in 1957, and the collegiate expectations the parents had for the respondent in 1957. All of these variables are statistically significant at the one percent level. The magnitude of both income and parental expectations are both positive, implying that growing up in a high-income, high-aspiration household correlates positively to the aspirations their children have for the kids of their own, without looking into qualities that come about after high school graduation. This result implies that background characteristics such as income and parental aspirations affect the generations to follow in terms of the aspirations of offspring.

After putting all of these results together into a robust regression, most qualities analyzed remain fairly constant in both magnitude and statistical significance. The biggest difference seen in these results is the change in the parental college expectation variable. This is to be expected, as both the college expectations of the respondent's own completion and the college expectations of the respondent's parents are taken in the same year and likely are very similar in the year of high school graduation. However, the magnitude of the collegiate expectations for the respondent's self does not experience the same large drop, as it goes from 0.115 in the first regression to 0.094. This in turn implies that the aspirations in this sample are influenced by their own past aspirations instead of those of their parents. However, this individual result does not imply that aspirations do not have any multi-generational components. In fact, according to the results of Regression 3, educational aspirations are heavily correlated at a magnitude of 0.037 for every 100 dollars made by the respondent's parents in 1957. This magnitude is much greater than the 0.019 magnitude of the respondent's income with the year of the survey question. In conclusion, the final results in this set of equations show a 0.019 increase in the respondent's aspirations for their children for every 100 dollars of familial income, a 0.011 decrease in aspirations for every year older their child is, a 0.3 increase in aspirations if they were first incarcerated when their oldest child was under the age of 13, a 0.104 decrease if they were married at the

time of the survey, a 0.029 increase for every 100 dollars increase in the graduation class, a 0.094 increase if they expected to go to college in 1957, and lastly, a 0.037 increase for every 100 dollars increase in the income of their parents in 1957 However, criminal record status throughout all 3 regressions remains statistically insignificant, implying no correlation between the two. **Note:** Other regressions were run to see if gender of the first born played a role in influencing the educational aspiration's of the respondent. These regressions concluded that they play no factor in said aspiration's.

Further analysis is done in the next set of regressions in order to signify any complex factors not found in these sets of analysis.

Table 6: Regression Results 1

	Respondent Qualities (1)	Parental Qualities (2)	Total (3)
Criminal Record Status 1975	-0.048	-	-0.12
Family Income in 1975	0.022**	-	.019*
	(x 100)		(x 100)
Age of First Born in 1975	−0.013***	−0.011***	−.011***
Child Young Age at First Incarceration	0.38**	-	0.39**
Marital Status of Respondent	−.098**	-	−0.104*
Ed. Attainment Respondent	0.00052	-	-0.0009
IQ of Respondent	.0027	-	0.0025
	(x 10)		(x10)
High School Size	.024**	-	.029**
	(x 100)	-	(x 100)
College Expectation of Respondent's Self 1957	.115***	-	0.094***
Parental Income in 1957	-	.044***	0.037***
	-		(x 100)
Ed. Attainment Father	-	.00039	-0.0001
Ed. Attainment Mother	-	0.0072	.0045
Parent College Expectations 1957	-	.077***	.04
N	1,937	1,937	1,937

Note: Regression 1 estimates Equation 1, Regression 2 estimates Equation 2, and Regression 3 estimates Equation 3. magnitude adjustment's for viewing purposes are in in parentheses. Assume: $^{*}pvalue < 0.1^{**}pvalue < 0.05^{***}pvalue < 0.01$.

After initial results, further regressions were conducted with interaction terms in order to deepen our understanding of the nature of aspirations within this sample (see Table 8). After some trial and error with interaction terms, two stood out. One is only statistically significant, and the other gives perspective on how to interpret this analysis. The first interaction in this model is the interaction between the respondent's criminal record status and educational attainment. Once this term was included in the basic regression, something unexpected happened: the criminal record status term became statistically significant at the five percent level. This term had a large negative magnitude. The magnitudes of the criminal status term and interaction term are -1.04 and 0.068, respectively. Looking at these numbers, simple math was conducted to see at what point in the respondent's education these two values would become equal. After doing the math:

$$NumberYears = \frac{1.04}{0.068} = 15.3 \tag{11}$$

We learned that this regression is telling us if the respondent is a criminal and has less than 15.3 years of schooling, that their criminal past has a negative impact on their aspirations for their child's education, and if it is above that number, it has a positive impact. Or, in other words, this analysis proves that if the respondent has less than a college degree (or less than 16 years of education), then having a criminal past has a negative influence on their aspirations for their child's education. Similarly, if the respondent has more than a bachelor's degree (or 16 years of education), then their criminal record status has a positive impact on their aspirations for their child's education at a magnitude of around 0.068 per year past a college degree. In addition, the educational attainment of the respondent still remains statistically insignificant. impact on aspirations. This infers that the respondent's level of education only impacts the respondent's aspirations if they have a criminal background.

Normally, this interpretation is as straightforward as interpreted above. However, as the size of our criminal sample is only 26 so we decided to see just how many of these criminal's have educations past a bachelors degree. If it were to be the case that only a few happened to have above a bachelors degree, then we can only truly infer that this interaction term is interpretative for those at a bachelor's degree or below. The following table shows our findings:

Table 7: Cross Tab Comparing Key Variables 3

	Record of Incarceration Before 1975		
Parental Ed. Attainment	No	Yes	Total
12 (High School Diploma)	907	11	918
	47.5%	42.3%	47.4%
13	349	4	353
	18.3%	15.4%	18.2%
14	96	2	98
	5%	7.6%	5.1%
15	130	4	134
	6.8%	15.4%	6.9%
16 (Bachelors Degree)	298	4	302
	15.6%	15.4%	15.6%
17	43	0	43
	2.3%	0%	2.2%
18	38	0	38
	2%	0%	1.9%
19	48	1	49
	2.5%	3.8%	2.5%
20	4	0	4
	0.2%	0%	0.2%
Total	1911	26	1937
	100.00%	100.00%	100.00%

As is observed in Table 7, only 1 criminal respondent (or 3.8% of the criminals) have an education above a bachelors degree. Therefore, this sample is too small to make an analysis about that group of former criminals. This implies, this interaction term is truly interpretative only for those with educations at or below a bachelors. This point may be debunked with a larger sample, but for this report, we will assume this interaction applies only for those with 16 years or less of education. Furthermore, this final result will be interpreted as: the educational aspiration for the respondent's first born child is 0.068 lower if they have a past of incarceration for every year below a bachelor's degree of education completed.

One question remaining after getting this result is answered in the next regression (Regression 5). This question is whether this interaction term can be interpreted as simply as above, or if it is implicit to a signaling mechanism. If all criminals have a level of education that is indistinguishable from the rest, it is possible that the ones with less education have lesser aspirations in general, whether it's for themselves or their children. Because of this possibility, an interaction term was defined between criminal record status and college expectations of the respondent's self in 1957. This interaction term proved statistically insignificant. This suggests that that there is no significance in the interaction between having a history of incarceration and their own expectations for themselves in the past. Or, the education interaction is not a signaling mechanism. This result allows us to interpret Regression 4 as expected.

Regression 6 proves this new interaction term is not changing much in the overall regression; therefore, this analysis stands without question as valid.

Table 8: Regression Results 2

	Ed. Interaction Regression (4)	Exp. Interaction Regression (5)	Interaction Total (6)
Criminal Record Status 1975	-1.04^{**}	-0.19^{*}	-1.09^{**}
Criminal Record Status 1975*Ed. Attainment of Respondent	0.068^{**}	-	0.072^{**}
Criminal Record Status 1975*College Expectation of Respondent's Self 1957	-	0.17	-0.02
Family Income in 1975	0.020^{*} (x 100)	$.019^{*}$	$.02^{*}$ (x 100)
Age of First Born in 1975	-0.011^{***}	-0.011^{***}	$-.011^{***}$
Child Young Age at First Incarceration	0.35^{*}	0.35	0.35^{*}
Marital Status of Respondent	-0.102^{*}	-0.102^{*}	-0.104^{*}
Ed. Attainment Respondent	-0.0016	-0.0009	-0.0016
IQ of Respondent	.0024 (x 10)	0.0026	0.0024 (x10)
High School Size	$.029^{**}$ (x 100)	$.029^{**}$ -	$.029^{**}$ (x 100)
College Expectation of Respondent's Self 1957	$.094^{***}$	0.092^{***}	0.094^{***}
Parental Income in 1957	$.037^{***}$ -	$.037^{***}$	0.036^{***} (x 100)
Ed. Attainment Father	0.00099	-0.001	-0.001
Ed. Attainment Mother	0.0057	0.0057	.0056
Parent College Expectations 1957	0.041	0.041	.040
N	1,937	1,937	1,937

Note: Regression 4 estimates Equation 4, Regression 5 estimates Equation 5, and Regression 6 estimates Equation 6. magnitude adjustment's for viewing purposes are in in parentheses. Assume: $^{*}pvalue < 0.1^{**}pvalue < 0.05^{***}pvalue < 0.01$.

In the primary results, the only reference to how the respondent's spouse may affect their educational aspirations is through the Marriage Status variable. However, it is intuitive that other qualities of the respondent's spouse may have something to do with their aspirations for their children. Unfortunately, the spousal results in this data set are full of too many outside factors that are impossible to remain constant. For instance, the spousal IQ variable was only taken in 2003 and only accounts for spouses that went to high school in Wisconsin. So, the only way to use this data is to remove spouses from the sample who were not with the same spouse in 2003 and 1975 and remove those who did not finish high school in Wisconsin. The spousal educational attainment variable, on the other hand, has its own types of complications. This variable has a much more robust data set from 1975; however, there is no way to control if their spouse is the mother of the child asked about. Furthermore, after condensing the data set, only 12 criminals remain, not a large enough sample to make any strong assumptions. With all of that said, a regression is still run with these characteristics, but these results are not mentioned in the final analysis.

Table 9 shows a potential correlation between the respondent's aspirations and both the educational attainment of their spouse and their IQ. Likewise, even after adding the criminal record statistics and educational attainment interaction term, the criminal record status variable becomes statistically insignificant. While the criminal record status variable becomes statistically insignificant, the first child born under the age of 13 at the time of the respondent's first incarceration becomes statistically significant at a 1 percent level, at a magnitude of 0.6. In addition, the only other variables in this regression that are statistically significant are the age of their firstborn, the high school size of the respondent, and the parental income of the respondent in 1957. All of these extra variables are statistically significant only at a 10 percent level, with the exception of the parental income of the respondent in 1957, which is statistically significant at the 1 percent level. In conclusion, these results imply that the aspirations of the respondent are most correlated to their spouse, the age of their firstborn, the income of their parents in 1957, and their past incarceration if they had their firstborn child under the age of 13 at the time.

Table 9: Regression Results

	Spousal Qualities (7)
Ed. Attainment Spouse	0.028^{**}
IQ of Spouse	0.035^{**}
Criminal Record Status 1975	-0.08
Criminal Record Status 1975*Ed. Attainment of Respondent	0.005
Family Income in 1975	0.0002 (x 100)
Age of First Born in 1975	-0.009^{*}
Child Young Age at First Incarceration	0.6^{***}
Ed. Attainment Respondent	-0.02
IQ of Respondent	0.002 (x10)
High School Size	0.042^{*}
College Expectation 1957	0.103
Parental Income in 1957	0.0043^{***}
Ed. Attainment Father	-0.009
Ed. Attainment Mother	0.006
Parent College Expectations	0.046
N	649

Note: Regression 7 estimates Equation 7 Magnitude adjustment's for viewing purposes are in in parentheses. Assume: $^{*}pvalue < 0.1^{**}pvalue < 0.05^{***}pvalue < 0.01$.

The main inspiration of this research is to look into what causes parental aspirations for their child's education for an overlooked group of individuals. However, this inspiration further stemmed from the research area of: What causes some individuals to struggle with economically mobilizing over generations as opposed to others? Because of this, regressions were run in order to determine the magnitude that parental aspirations and criminal incarceration have on children's eventual educational accomplishments years later.

The main results from this analysis will come from Regression 8 in Table 10. Regressions 9 and 10 represent some of the interaction terms that were regressed, but none created any impactful or statistically significant results. In Regression 8, the statistically significant results end up being: the respondent's aspirations, family income in 1975, educational attainment of the respondent, high school rank of the respondent, and the educational attainment of the respondent's mother. Amongst all of the statistically significant results, respondent aspirations and educational attainment possess the largest magnitude on average. In all 3 regressions, criminal record status remains statistically insignificant, even when adding in the same interaction term as before. Moreover, this regression implies that having a parent with a record of incarceration does not have any direct correlation to how well the child performs academically.

Table 10: Regression Results Actual Outcome

	Ed. Attainment (8)	Ed. Attainment Int. 1 (9)	Ed. Attainment Int. 2 (10)
Respondent Aspiration's 1975	0.30**	0.28**	0.30**
Criminal Record Status 1975	0.92	0.14	-0.044
Criminal Record Status 1975*Respondent Aspiration's 1975	-	1.63	-
Criminal Record Status 1975*College Expectation of Respondent's Self 1957	-	-	2.28
Family Income in 1975	0.014** (x 100)	0.014*	.014* (x 100)
Child Young Age at First Incarceration	-1.4	-1.96	1.94
Marital Status of Respondent 1975	-0.56	-0.54	-0.53
Ed. Attainment Respondent	0.26***	0.26***	0.26***
IQ of Respondent	-0.0016 (x 10)	-0.0035	-0.0008 (x10)
High School Size	-0.074 (x 100)	-0.074 -	0.071 (x 100)
High School Rank	0.01*** (x 100)	0.01*** -	0.01*** (x 100)
College Expectation of Respondent's Self 1957	0.22	0.22	0.18
Parental Income in 1957	-0.047 -	-0.049	0.50 (x 100)
Ed. Attainment Father	0.0059	.026	0.0063
Ed. Attainment Mother	0.63**	0.63**	0.63
Parent College Expectations 1957	-0.115	-0.115	-0.105
N	1,424	1,424	1,424

Note: Regression 8 estimates Equation 8, Regression 9 estimates Equation 9, and Regression 10 estimates Equation 10. magnitude adjustment's for viewing purposes are in in parentheses. Assume: $^{*}pvalue < 0.1^{**}pvalue < 0.05^{***}pvalue < 0.01$

VI. Discussion

In this paper, the effect of incarceration on the educational aspirations of the respondent's children is analyzed. Little work has been done in the realm of why parents have the educational aspirations for their children that they do. As aspirations have been proven time and time again to have a significant correlation with the outcomes of children, having a greater understanding of the nature of aspirations helps in the research field of economic mobility. This research discovers that incarceration affects a child's educational aspirations, but only when counting for the interaction between incarceration and educational attainment.

When this is counted, the data shows that incarceration has a stronger negative correlation with parents aspirations for their child's education if they have lower educational attainment. In summary, incarceration decreases aspirations at a rate of 0.068 per year of total education less than a bachelor's degree. This is again assuming all respondents have at least a high school diploma. Large deviations between completing 16 years of education and 12 result in a criminal background having a large impact on their aspirations for their child's education.

While there isn't much literature out there focusing on parental aspirations as a dependent variable, the final analysis results are fairly consistent with the literature surrounding the effect parental incarceration has on the educational attainment of their children. The literature surrounding this question is mixed, with some coming to the conclusion that incarceration has a negative effect on child success, some concluding that there is a statistically insignificant effect, and even some finding a positive correlation between child success and parental incarceration. This paper comes to a similar conclusion, that the effect is very dependent on outside factors, whether it's the educational attainment of their parents or if they have an incarcerated parent before puberty. This outcome is consistent with literature, as it produces a complex relationship between incarceration and parental aspirations.

This paper produces statistically significant results; however, bias from the nature of the crimes committed could alter the significance. For instance, those with a lower level of educational attainment are more likely to commit blue collar crimes, resulting in a negative omitted variable bias with the criminal record status + educational attainment interaction term. Similarly, this could result in a positive bias for the base criminal record term, integrating the magnitude closer to the value seen in Equation 3.

If a large sample size of criminals were obtained, intuitively, this regression would still show respondents with below a bachelor's degree more of a negative correlation to aspirations and education. However, it is unlikely that higher education would result in a criminal record increasing their aspirations. A different method of data collection would also be beneficial. Within these survey questions, many choose to opt out of unflattering questions such as "Do you have a history of incarceration?" Because of this, we don't have access to all of the criminals in the data set. These criminals' display a consistent economic behavior of

wanting to be hidden, which could also correlate to other hidden economic behaviors that are impossible to count for in this report. If a more robust data collection method were to be used, all respondents data would be used more randomly, thus containing less hidden bias.

Lastly, the inability to obtain quality data on the mother's likely produces immeasurable biases. Looking at Regression 8, the mother's educational attainment is statistically significant and positive, while the father's is insignificant. This implies a possible positive bias in the aspirations.

VII. Conclusion

This paper provides valuable insight into the economic knowledge of both how children of incarcerated parents fare compared to the rest of the population and what influences parental aspirations the most.

Future research on parental aspirations would be useful in contributing to this research area. This could include a different minority group, or more research with criminal's in a data set containing more information on the crimes committed by the respondents as well as how long they served. In addition, a data set with female criminal's would be interested, as mother's and father's seem to have different economic behavior based on this research.

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